

Notes on Japanese Schizopoda.

By

K. Nakazawa, *Rigakushi*.

With Plate VIII.

In my studies of the Japanese Schizopoda I have been able thus far to collect seventeen species in all. Of that number, five are referable to species already known, viz., *Neomysis intermedia* Czerniavsky, *Euphausia pellucida* Dana, *Euphausia splendens* Dana, *Rhoda inermis* (Kröyer) and *Rhopalophthalmus egregius* Hansen; while the remaining twelve seem to be new to science. It is proposed in this paper to give diagnoses of these new species and, in addition, of *Rhopalophthalmus egregius* Hansen, since this species has been but imperfectly known.

I beg here to express my thanks to Prof. Dr. Ijima for the kind encouragement given me during my studies and also to all those gentlemen who helped me in collecting the material.

Order **MYSIDACEA**

Genus **Neomysis** Czerniavsky, 1883.

1. *Neomysis japonica* n. sp.

Plate VIII., fig. 2, 25.

Diagnosis.— Carapace with rounded rostrum provided with a curved ridge (fig. 2). Antennal scale 9–10 times as long as broad. Flagella of both antennae shorter in female than in male. Third and all following legs with propodites consisting of 8–12 joints; last

leg always with a less number of propodite joints than in other legs. Outer branch of fourth pleopod (fig. 25) with the proximal joint about seven times as long as the distal joint, and the latter about one-fourth as long as terminal filaments. Telson elongate, triangular with 30-35 uniform spines on each lateral margin; the tip rather acute, provided with four spines of which the lateral two are longer than the median two or other marginal spines. Both branches of uropods longer than telson; the inner branch with a group of densely packed spinules, 25-37 in number, situated near the inner margin just below the large otocyst. Larger individuals of the species reach 16 mm. in length.

Localities.— Brackish waters of the Pacific coast of Japan. The material in my hand hail from Teisanbori, a canal near Sendai; the Gulf of Tokyo, near the mouth of River Kiso, Prov. Ise; the Kojima Gulf in the Inland Sea. In all these localities the species is caught by fisherman in quantities almost at all seasons of the year.

Notes.— This species is closely allied to *N. vulgaris*, but the rounded rostrum and different proportional lengths of the joints of fourth pleopod in male, should serve to easily distinguish the two species.

2. *Neomysis nigra* n. sp.

Plate VIII., figs. 3, 17, 30.

Diagnosis.— Carapace with pointed rostrum. Eye reniform (fig. 3). Antennal scale 8-9 times as long as broad. Thoracic legs moderately slender, with basal joint well developed and with propodite segmented into 3-6 joints; last leg with a greater number of joints than the two legs preceding (fig. 17). Outer branch of fourth pleopod in male reaching to middle of telson, its proximal joint about 4 times as long as the distal, the latter shorter than terminal filaments. Telson (fig. 30) shorter than twice the breadth at base, armed with 16-20 uniform spines on each lateral margin; apex truncate, rather wide and armed with four spines, of which the two lateral are longer than the two median as in *N. japonica*. Inner branch of uropods provided

with a large otolith; with a dense row of spines closely ventral to otocyst as in the species just mentioned. Average length of body 7.8 mm.

Locality.— The species is found in abundance in the so-called Lake of Hamana, Prov. Tōtōmi, which is in fact a brackish inlet of the sea. It also occurs in the Gulf of Tokyo.

Notes.— This species closely resembles *N. japonica*, but is distinguishable from it by the pointed rostrum. It differs from *N. kadiakensis* of Alaska in the shape of antennal scale and in the structure of propodite.

3. *Neomysis spinosa* n. sp.

Plate VIII., figs. 4, 10, 31.

Diagnosis.— Carapace with acutely pointed rostrum (fig. 4). Each of the four anterior abdominal segments with a transverse ridge in the middle; the fifth abdominal segment with two and the last segment with four, transverse rows of short spines. Eye globose; eye-stalk rather long, its proximal half densely beset with spinules (fig. 4) and with an elevation on the dorsal side of the distal half. Antennular peduncle (fig. 10) very robust; male sexual appendage of an elongate and somewhat triangular shape. Propodite of all legs consisting of 5 joints; dactylopodite distinctly claw-like. Outer branch of fourth pleopod in male, scarcely reaching the middle of last abdominal segment, the two terminal filaments about three times as long as the distal joint of the branch. Telson (fig. 31) much longer than last abdominal segment, linguiform, somewhat constricted near to base, gradually tapering towards truncate tip; lateral spines strong and uniform in the proximal half of margin, but in the distal half of same arranged in about eight successive sets, each set being composed of two or three equally long spines followed with a longer and stronger spine. Inner branch of uropod shorter than telson; spines on the ventral side near otocyst 6-7 in number. Outer branch of uropods a little longer than the inner. Average length of entire body 10. mm.

Locality.— Misaki, 10-20 fathoms.

Notes.— This species resembles *N. americana* in the spinulation of telson, but the latter species has rounded rostrum and shorter antennal scale. It also resembles *N. mirabilis* in the shape of telson, but in this species the lateral spines of telson are all of a uniform size, while the propodites are more numerously segmented than in the present species.

Metamysis n. gen.

Antennal scale slender, obliquely truncate at apex, setose on both margins, jointed at the second serration from apex. Labrum pointed anteriorly. Posterior 6 pairs of legs with multiarticulated propodite; meropodite longer than carpopodite and very stout. Telson elongate, linguiform; apex entire, provided with several uniform spines. In male, fourth pleopod composed of a short basal joint, an inner branch of one joint and an outer branch of two joints; the latter with two long terminal filaments; other pleopods rudimentary. Marsupium composed of two pairs of lamellae springing from bases of the posterior two pairs of thoracic limbs.

4. *Metamysis mitsukurii* n. gen. & n. sp.

Plate VIII., figs. 9, 11, 13, 18, 26.

Diagnosis.— Carapace with pointed rostrum. Anterior three abdominal segments with 2 or 3 transverse grooves on each; fourth and fifth segments armed with 3, and the last segment with 7, rows of spinules (fig. 9). Antennular peduncle stronger in male than in female. Antennal scale extending scarcely beyond antennular peduncle, about six times as long as broad (fig. 11). Labrum with an acute anterior projection reaching the end of the middle joint of mandibular palp (fig. 13). Legs rather slender, all propodites made up of 6 joints; basal joint of exopodite of all thoracic limbs strong and provided with many minute spinules on the outer margin (fig. 18). Fourth pleopod of male (fig. 26) with the outer branch reaching far beyond

middle of last abdominal segment. Telson longer than last abdominal segment; apex obliquely truncate and provided with about 7 uniform spines; lateral margin with spines which in general grow longer posteriorly and are divided into about seven sets by repeated occurrence of markedly shorter spines at intervals of some five or more longer ones in succession. Inner branch of uropods nearly equal in length to telson; spines on the ventral side near otocyst 3 in number.

Average length of body 8.2 mm.

Localities.— Off Ōarai on the coast of Prov. Hitachi. Off Maisaka on the coast of Prov. Tōtōmi.

Notes.— Characteristic to the species is the fact that the abdomen is grooved and spinulated.

5. *Metamysis sagamiensis* n. sp.

Plate VIII., fig. 32.

Diagnosis.— Carapace with acutely pointed rostrum. Abdomen smooth. Antennal scale extending far beyond antennular peduncle. Labrum with a short anterior projection. Each leg with a strong meropodite and a short ischiopodite. Basal joint of the exopodite of thoracic limbs provided with only a few short spines at the anterolateral corner. Fourth pleopod of male slightly exceeding in length the penultimate abdominal segment; the two terminal filaments about three times as long as the joint bearing them. Telson (fig. 32) equal in length to that of the two posteriormost abdominal segments taken together; gently tapering behind to the broad apex with four uniform and remarkably strong spines; lateral margin of telson with 5-6 spines near base, thereafter spineless for a short length, and finally again with a row of spines, of which every third one is much longer than the rest. Inner branch of uropod reaching to tip of telson, slightly dilated at the position of otocyst; seven spines on the ventral side near otocyst. Outer branch of uropod reaching a little beyond the four spines at the apex of telson, 5 times as long as broad. Length of body 12. mm.

Locality.— Near Enoshima in Sagami Bay.

Notes.— A characteristic point of this species lies in the armature of telson

Anisomysis Hansen, 1910.

The genus was recently established by Dr. Hansen in "The Schizopoda of the Siboga Expedition" for the single species *A. laticauda*. In my material there are two species which are referable to that genus. Both the species have the posterior margin of telson entire, instead of showing a deep median incision as does Hansen's species. The generic diagnosis needs amendment in relation to this point only.

6. *Anisomysis ijimai* n. sp.

Plate VIII, figs. 5, 14, 27, 33.

Diagnosis.— Carapace with obtuse rostrum. Eye remarkably large. Antennular peduncle stout, its third joint much shorter than basal joint. Antennal scale 7-8 times as long as broad; antennal peduncle composed of three short and nearly equal joints. The three pairs of flagella greatly differ in length according to sex; the two flagella of antennule more than twice longer in male than in female. Labrum truncate anteriorly. Mandibular palp (fig. 14) with a peculiar middle joint provided with a row of 7 or 8 short knobs on the inner side, comparable to the serration of the same part in *Lycomysis spinicauda* Hansen. Posterior six pairs of legs rather short, armed with a sparse number of spines; the propodite divided into two joints near distal end. Fourth pleopod of male (fig. 27) with the outer branch reaching to middle of telson; distal two joints of the outer branch nearly equal in length, the terminal joint provided with two spines just as in *A. laticauda* Hansen. Telson (fig. 33) about two-thirds of the last abdominal segment in length, distinctly constricted in the posterior parts, the portion behind that constriction being represented by a round plate fringed with about 18 spines. Inner branch of

uropod about one and a half times as long as telson, much dilated at base; spines on the ventral side quite invisible. Average length of body 7.3 mm.

Localities.— Misaki in Prov. Sagami; Enoura in Prov. Suruga; Tateyama in Prov. Awa. In all these localities the species is taken in great quantities by fishermen.

Notes.— This species can be easily distinguished from others of the genus by the armature of the mandibular palp and by the characteristic features of telson. In other points the species closely resembles *A. laticauda* Hansen.

7. *Anisomysis mixta* n. sp.

Plate VIII., figs. 28, 34.

Diagnosis.— Carapace with distinct rostrum. Third joint of antennular peduncle nearly equal in length to basal joint. The three pairs of flagella markedly different in length according to sex; more than twice longer in male than in female. Eye large, somewhat reniform. Antennal peduncle half as long as the scale. Propodite in posterior six pairs of legs shorter than carapace, composed of two joints. Fourth pleopod of male (fig. 28) reaching down to end of telson; the last joint of its outer branch more than twice as long as the middle joint. Telson (fig. 34) about one-third as long as the last abdominal segment, triangular in shape; its posterior half fringed with about 24 spines which increase in size posteriorly. Uropod as in *A. ijimai*. Average length of body 5. mm.

Locality.— Misaki in Prov. Sagami.

Notes.— The characteristic features of this species consist in the jointed structure of the fourth pleopod in male and in the triangular shape of telson. The species is of a smaller size than *A. ijimai*, with which it occurs together but always in a less number.

Gastrosaccus Norman, 1892.

8. *Gastrosaccus vulgaris* n. sp.

Plate VIII., figs. 6, 23, 24, 29, 35.

Diagnosis.— Carapace narrowed anteriorly, with obtusely pointed rostrum, deeply emarginated at the posterior edge so as to form round and smooth lateral lobes (fig. 6). Eye round, with short eye-stalk. Antennular peduncle very strong; its middle joint with two spines above; base of outer flagellum swollen and with olfactory hairs in both sexes. Antennal scale reaching to second joint of antennular and antennal peduncles, with apex rather straightly truncate. Legs with propodite made up of 10–11 joints; dactylopropodite invisible. Epimera remarkably large. First pleopod of female (fig. 23) composed of a long basal joint and two branches; other female pleopods rudimentary and one-jointed. Third pleopod of male (fig. 29) reaching to end of last abdominal segment, its outer branch segmented into four distinct joints, the first joint being indistinctly subdivided into four joints in the distal parts where numerous hairs grow on the inner side. Telson (fig. 35) a little longer than last abdominal segment, about three times as long as broad at base; lateral margin with 7–8 strong spines. The two branches of uropod nearly equal in length, reaching to tip of telson; inner branch with 5–6 spines along its inner margin, with remarkably small otolith; outer branch armed with 14 short but strong spines along outer margin. Average length of body 10.4 mm.

Localities.— Sandy beaches of: Ōhara in Prov. Shimosa; Zushi in Prov. Sagami; Ōarai in Prov. Hitachi.

Notes.— This species differs from *G. indicus*, *G. spinifer*, and *Haplostylus normani* by the structure of pleopods and by the shape of telson, amongst many other points. Apparently it is most nearly allied to *Archaeomysis grebnitzkii* Czerniavsky of Behring Sea, though differing in no small degree in the structure of the pleopods of female individuals.

9. *Gastrosaccus kojimaensis* n. sp.

Plate VIII., fig. 7, 20.

Diagnosis.— Carapace narrowed anteriorly; with rostrum more distinct than, but posterior margin of carapace emarginate as, in *G.*

vulgaris, though with more oval-shaped lateral lobes. Antennular peduncle strong, its middle joint with 3 spines above (fig. 7). Outer flagellum of antennule swollen at base in both sexes, more distinctly so in male than in female. Antennal scale obliquely truncate at tip, which reaches beyond outer spine of the scale. Labrum pointed anteriorly, its anterior margin armed with 4 spines on each side of a median projection. Legs stout; propodite segmented into 8-15 joints, that of last leg with most numerous joints; meropodite of all legs very strong and longer than carpopodite; dactylopodite invisible (fig. 20). First pleopod in male with broad basal joint armed with long plumose spines along one side; outer branch of all pleopods normal and multiarticulated; third pleopod very long and with outer branch segmented into four joints; inner branch of second and third pleopods normal and multiarticulated; that of first, fourth and fifth pleopods rudimentary and one-jointed. Telson gently tapering to apex, three times as long as broad at base; lateral margin armed with 14 spines, the last of these being remarkably strong. Both branches of uropod longer than telson; ventral inner margin of inner branch armed with 10 strong spines; otolith small; outer branch armed with 19-20 strong spines along outer margin. Body length 11 mm. in average.

Locality.— Kojima Bay in Inland Sea.

Notes.— This species differs from *G. vulgaris* in the rostrum being more distinct and in the telson being more spiny.

Rhopalophthalmus Hansen, 1910.

10. *Rhopalophthalmus egregius* Hansen.

Plate VIII., fig. 12, 22.

Carapace not covering four posterior thoracic segments; its anterior margin rounded, with a pair of pointed process instead of being augulated as given by Hansen. Antennal scale reaching to tip of antennular peduncle, about five times as long as broad (fig. 12). The

five pairs of legs preceding the last slender; their propodite indistinctly segmented into 3 joints in the distal parts, each of the joints armed with two remarkably long spines; meropodite shorter than carpopodite. All exopods of thoracic limbs well developed; outer distal corner of their large first joint rounded and spineless. Last pair of legs markedly reduced, papilliform and one-jointed in both sexes. Marsupium composed of three pairs of lamellae springing from bases of three posterior thoracic limbs. Pleopods of male, telson and uropod just as described by Hansen. Body 14 mm. in average length.

Locality.— Port Shimizu (Suruga Bay).

Notes.— The original description of the species by Hansen in "The Schizopoda of the Siboga Expedition" was drawn up from a single male individual and is therefore necessarily incomplete. The diagnosis I have given above has been prepared after a study of numerous well preserved specimens of both sexes.

Genus **Siriella** Dana, 1852.

11. *Siriella watasei* n. sp.

Plate VIII., figs. 8, 36.

Diagnosis.— Carapace with acute rostrum (fig. 8). Eye large, globose. Inner flagellum of antennule dilated at base. Antennal scale about four times as long as broad in the broadest part, scarcely reaching to tip of antennular peduncle. Posterior six pairs of legs rather slender; carpopodite strongly developed and longer than meropodite; propodite segmented into two joints, the distal joint about twice as long as the proximal; dactylopodite remarkably long and rather straight; last pair of legs much shorter than preceding five pairs; exopodite in anterior seven pairs of thoracic limbs with the first joint pointed at distal outer corner, but that of the last pair rounded at the same part. All pleopods of male like same of *Siriella vulgaris* Hansen 1910. Telson (fig. 36) shorter than three times its breadth at base, somewhat constricted near base; its lateral margin anterior to

the constriction with three spines; same behind the constriction with numerous spines which regularly grow larger posteriorly; the last pair of spines remarkably strong, between which grow 2 hairs and 3 small spines smaller than lateral ones. Outer branch of uropod much longer than the inner and articulated at two-thirds of its length from base, the distal joint shorter than twice its breadth; the outer distal margin of proximal joint provided with 9-12 spines, beginning a short distance behind the middle of that margin. Inner branch of uropod densely beset with spines, of which there are about 10 long ones, separated from one another by about 3 much shorter ones. Average length of body 9.2 mm.

Locality.— Near the Misaki Marine Laboratory. Also discovered in the stomach of *Clupea* sp. caught off the coast of Odawara in Sagami Bay.

Notes.— This species closely resembles *Siriella vulgaris* Hansen obtained by the Siboga in the Indian Sea, but differs from it in the peculiar form of the inner flagellum of antennule and in the greater difference in length of the two branches of uropods.

12. *Siriella longipes* n. sp.

Plate VIII., fig. 19.

Diagnosis.— Carapace with sharply pointed rostrum. Eye globose. Antennular peduncle with the third segment longer than the first. Antennal scale reaching to middle of the last segment of antennular peduncle, about four times as long as broad. Legs conspicuously slender, especially the fifth, the sixth and the seventh; propodite of the posterior three pairs of legs segmented into two joints in the middle of its length, that of more anterior legs somewhat nearer to base; dactylopodite strongly curved (fig. 19). Last leg shorter and more feebly developed than other preceding legs. Telson linguiform, its lateral margin armed with about 34 short and uniform spines. Outer branch of uropod segmented at a point more proximal than

two-thirds of its length from base, distal joint longer than twice its breadth at base; outer distal margin of the proximal joint provided with a row of 8-10 spines, the row not extending into posterior half of the margin. Inner branch of uropod much shorter than the outer. Length of body 10. mm.

Locality.— Near Misaki.

Notes.— The characteristic points of this species lie in the third joint of antennules being longer than the first and in the strongly curved dactylopodite.

Order EUPHAUSIACEA

Genus **Stylocheiron** G. O. Sars, 1883.

13. *Stylocheiron orientalis* n. sp.

Plate VIII., figs. 1, 15, 16, 21.

Diagnosis.— Carapace short, slightly keeled above, with long and sharply pointed rostrum (fig. 1). Antennular peduncle sexually different; in the female it is longer, the two last joint being especially more slender than in the male; basal joint stout, longer than the other two joints taken together, but considerably flattened above, with a short stout spine on the outer distal margin. Mandible with reduced masticatory surface and no mandibular palp (fig. 15). Second maxilla lamellose, its exopodite elongate. Exopodite of first thoracic limb composed of many joints with a few long spines, while that of other thoracic limbs is two jointed. First and second pairs of legs feebly developed (fig. 16); meropodite of second leg much lengthened. Third leg (fig. 21) very slender, its meropodite longer than any other joint of the leg, the terminal joint with three long and two short spines, not chelate; propodite longer than carpopodite. Gills and luminous organs as in other species of the genus. Average length of body 9.3 mm.

Locality.— Near Bonin Islands.

Notes.— Peculiar to this species is the fact that the propodite is longer than carpopolite in the third leg, the reverse being the case in all the other species hitherto known.

Explanation of the Plate VIII.

Fig.	1.	Anterior parts of <i>Stylocheiron orientalis</i> .	× 16.
"	2.	" " " <i>Neomysis japonica</i> .	"
"	3.	" " " <i>N. nigra</i> .	"
"	4.	" " " <i>N. spinosa</i> .	"
"	5.	Male of <i>Anisomysis ijimai</i> .	× 12.
"	6.	Female of <i>Gastrosaccus vulgaris</i> .	"
"	7.	Anterior parts of <i>G. kojimaensis</i> .	× 16.
"	8.	" " " <i>Siriella watasei</i> .	"
"	9.	Male of <i>Metamysis mitsukurii</i> .	× 12.
"	10.	Antennule of <i>Neomysis spinosa</i> .	× 35.
"	11.	Antenna of <i>Metamysis mitsukurii</i> .	"
"	12.	" " <i>Rhopalophthalmus egregius</i> Hansen.	"
"	13.	Labrum and mandible of <i>Metamysis mitsukurii</i> .	"
"	14.	Mandible of <i>Anisomysis ijimai</i> .	"
"	15.	" " <i>Stylocheiron orientalis</i> .	"
"	16.	First thoracic limb of <i>Stylocheiron orientalis</i> .	"
"	17.	Eighth " " " <i>Neomysis nigra</i> .	"
"	18.	Sixth " " " <i>Metamysis mitsukurii</i> .	"
"	19.	" " " " <i>Siriella longipes</i> .	"
"	20.	Eighth " " " <i>Gastrosaccus kojimaensis</i> .	"
"	21.	Third " " " <i>Stylocheiron orientalis</i> .	"
"	22.	Eighth limb of <i>Rhopalophthalmus egregius</i> Hansen.	"
"	23.	First pleopod of female <i>Gastrosaccus vulgaris</i> .	"
"	24.	Second " " male " "	"
"	25.	Fourth " " " <i>Neomysis japonica</i> .	"
"	26.	" " " " <i>Metamysis mitsukurii</i> .	"
"	27.	" " " " <i>Anisomysis ijimai</i> .	"
"	28.	" " " " " <i>mixta</i> .	"

- Fig. 29. Third pleopod of male *Gastrosaccus vulgaris*. × 35.
,, 30. Telson of *Neomysis nigra*.
,, 31. ,, ,, *N. spinosa*.
,, 32. ,, ,, *Metamysis sagamiensis*.
,, 33. ,, ,, *Anisomysis ijimai*.
,, 34. ,, ,, *A. mixta*.
,, 35. ,, ,, *Gastrosaccus vulgaris*.
,, 36. ,, ,, *Siriella watasei*.
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